

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
10 May 2001 (10.05.2001)

PCT

(10) International Publication Number  
**WO 01/32278 A1**

(51) International Patent Classification<sup>7</sup>: A63F 5/04

(21) International Application Number: PCT/GB00/04227

(22) International Filing Date:  
6 November 2000 (06.11.2000)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

9926140.6 5 November 1999 (05.11.1999) GB  
0003130.2 14 February 2000 (14.02.2000) GB

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

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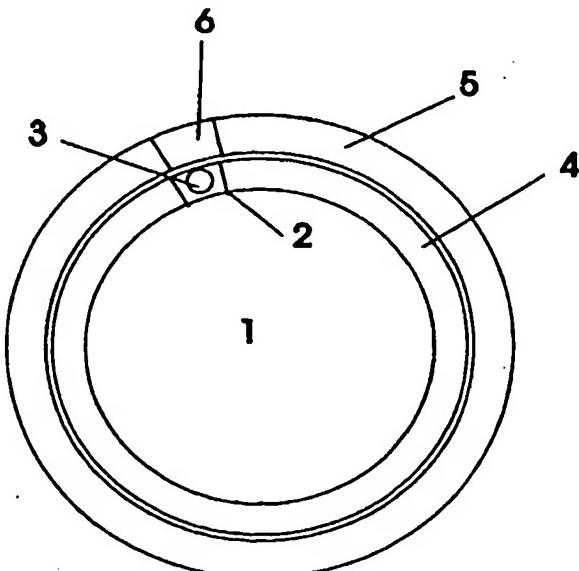
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Published:

— With international search report.

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: IMPROVED ROULETTE WHEEL



(57) Abstract: A roulette wheel (1) incorporates a removable shaped block (6) which fits into the outer fixed rim (5) of a roulette wheel so that the outer rim appears continuous the block can incorporate sensor (7) such as a counter and the block can be replaced by blank block when the sensor is not used.

WO 01/32278 A1

- 1 -

### Improved Roulette Wheel

The present invention relates to improvements in the detecting and recording of winning numbers in a roulette wheel.

5

In roulette wheels it is useful for the winning numbers to be displayed and stored so that it is possible for people playing to see a display which is a sequence of the last winning numbers and for there to be a permanent recording of the winning numbers so that, in the unlikely event of there being any bias in the wheel, this is immediately 10 detected. To achieve this a detector is attached to a mounting point adjacent to the wheel which detector is able to detect the ball after it has come to rest and, as in some cases the zero is a different colour from the other numbers, the detector counts the numbers from the zero to where the ball is at rest as the wheel turns and so will detect 15 the winning number. In other cases the detector reads the number of the pocket which holds the ball; as well as being automatically stored this number can be displayed on a screen etc. along with a sequence of previous winning numbers.

US Patent 5863583 discloses a detector which sits on top of the rim of the wheel and is attached to the outer rim of the roulette wheel by "Velcro". As the detector sits on 20 top of the rim of the wheel, however this unsightly and the detector can be knocked, dislodged or its position or orientation inadvertently changed. Casinos like to rotate the bowl so that no one spot is worn by the croupier starting the ball in the same position on the bowl each time and the need to reset the detector deters this rotation 25 of the bowl. In addition some players, particularly if they are losing, will be of the opinion that any device like the detector obviously positioned near the wheel will be used to influence or control the wheel in the interest of the casino owners.

We have now devised a roulette wheel which overcomes these problems.

30 According to the invention there is provided a roulette wheel in which there a central circular wheel section which rotates about a vertical axis and has numbered pockets around its circumference into which a ball can drop and be retained and an outer

- 2 -

fixed rim surrounding the central section, there being at least one removable block mounted in the rim which block incorporates a sensing means.

The block incorporating the sensing means can be replaced by a "dummy" block which does not incorporate a sensing means but which can be replaced by a block  
5 incorporating a sensing means.

The structure function and operation of roulette or roulette wheels is described in US Patent 5836583 and its contents are incorporated herein by reference.

10 The sensing means can be a ball detector, a means to detect when a security cover is placed over the wheel or a sensing means which can sense the presence or movement of any piece of equipment associated with the roulette wheel.

15 A ball detector is able to detect a ball which is held in a pocket whilst the wheel rotates and can incorporate a means whereby the number of the pocket which holds the ball can be detected.

Preferably the detector is able to detect the ball whilst it is in motion before it comes to rest in a pocket.

20 Preferably the detector is mounted in a block which fits removeably into a gap in the rim so that the rim appears substantially continuous with no breaks in it. In practice there will be a small gap between the block and the rim but this should be minimised. Alternatively the detector can be fixed permanently into the rim.

25 By having markings, such as a pattern on the rim, the presence of the block can be camouflaged to make it substantially completely inconspicuous.

30 Preferably there is also a block adapted to fit into the gap so that, if the detector is not used, it can removed and the gap filled with the block so as to present a uniform appearance. Optionally this block has fixing means such as pegs, or holes for pegs by which a conventional detector can be attached to the block.

Alternatively the detector can be incorporated into a ring which fits on the rim surrounding the wheel and which can incorporate one or more detectors.

Detectors are well known and used and conventional detectors can be used in the  
5 present invention, the detector is of a size and shape so that, when it is placed in the gap in the rim, it views the pockets on the wheel so that, when a ball is in the pocket, it is detected.

In a preferred embodiment of detector the light which is reflected off the ball passes  
10 through a transparent window or hole in the detector and is reflected off a mirror mounted in the detector and reflected to a light receptor mounted within the detector.

As the strength of the light reflected off the ball which is received by a receptor will vary according to the relative location of the receptor to the ball it is possible to  
15 mount the window in the detector at a location where it receives a strong reflection of light from the ball and to use the mirror to reflect the light to the receptor mounted in a convenient location within the detector. The receptor can be a conventional light receptor such as a photodiode etc.

20 By having a gap formed in the rim, the detector is always accurately positioned in relation to the pockets to provide the correct view of the pockets. The detector is shaped to conform to the ring so that, when the detector is in use, it is not conspicuous and when it is not in use it can be replaced by the block and the rim has its normal appearance. This also facilitates the removal of the detector for servicing  
25 etc.

Optionally there can be a plurality of detectors spaced around the rim.

Instead of a ball detector the block can incorporate any other type of sensing,  
30 communication or electrical or electronic device so that information about the wheel e.g. its serial number, its location or its operation can be transmitted to a relevant location.

- 4 -

In a typical roulette wheel the numbers are in the established sequence and the zero is marked in a different colour to the other numbers e.g. it is green and this makes it easy for the detector to identify the zero and, by counting the pockets between zero and the stopped ball, the number where the ball has stopped is detected and recorded.

5

This number can be displayed etc. as in presently used detectors.

When not in use a security cover can be placed over the wheel and locked in place so that the wheel cannot be tampered with and a sensing device can be used which detects the presence of this cover so that any movement of the cover is immediately detected.

10

A sensing means can also be incorporated which will detect any movement of the wheel so that any unauthorised use can be detected.

15

The invention is illustrated in the accompanying drawing in which: -

Fig. 1 is a schematic view of a part of a roulette wheel

Fig. 2 is a view of a block incorporating a detector and

Fig. 3 is a side view of part of a roulette wheel

20

Fig. 4 is a view of a different embodiment of the invention and

Fig. 5 is a view of part of fig. 4 showing the detector arrangement

25

Referring to fig. 1 of the drawings, a roulette wheel (1) which rotates about a central vertical axis has pockets in its outer rim (4) one of which is shown at (2).

Surrounding the wheel is a fixed rim (5) and there is a gap (6) in rim (5). There is a block (8) which fits into gap (6) so the rim (5) is continuous and the block (8) has a detector (7) incorporated in it (fig. 2). In use the block (8) is placed in gap (6) so detector (7) is able to detect ball (3) in pocket (2).

30

Referring to fig. 3 the wheel or bowl (11) is mounted on shaft (13) which is connected to bearings (12) so that the bowl can spin about the bearings (12). There is a surround (16) which has rim (15) mounted outside the bowl (11). In rim (15) is

- 5 -

mounted detector (17) which is positioned so that it can see a ball (13) in pocket (14) of bowl (11).

- When the wheel is spun a ball will drop into a pocket as the wheel slows down, and
- 5      the detector (7) detects the ball and will count the number of pockets from the zero to the pocket where the ball is, and thus the winning number can be recorded and indicated on an indicator. When the detector is not required a block the same size and shape as block (8) but without the detector (7) is placed in the rim (5).
- 10     Referring to figs. 4 and 5 the detector (17) has a window (23), mirror (22) and light receptor (21). Light reflected from ball (13) passes through window (23) is reflected off mirror (22) to receptor (21). This enables a strong reflection from the ball (13) to be received by the receptor (21).

## Claims

1. A sensing means incorporated into a shaped block which shaped block is adapted to fit into a gap in a circular rim which is able to be positioned around a roulette wheel.
- 5
2. A sensing means as claimed in claim 1 which is a detector which is able to detect a ball held in a pocket whilst the wheel rotates and which detector incorporates means whereby the number of the pocket which holds the ball can be detected.
- 10
3. A detector as claimed in claim 2 in which there is a transparent window or hole in the block and a mirror and light receptor mounted within the block whereby light passing through the window or hole is reflected by the mirror and received by the light receptor.
- 15
4. A roulette wheel in which there a central circular wheel section which rotates about a vertical axis and has numbered pockets around its circumference into a which a ball can drop and be retained and an outer fixed rim surrounding the central section there being at least one removeable block mounted in the rim which block incorporates a sensing means as claimed in any one of claims 1 to 3.
- 20
5. A roulette wheel as claimed in claim 4 in which the sensing means is a detector which is able to detect a ball which is held in a pocket whilst the wheel rotates and which detector incorporates means whereby the number of the pocket which holds the ball can be detected.
- 25
6. A roulette wheel as claimed in claim 5 in which there is a transparent window or hole in the detector and a mirror mounted within the detector which mirror is positioned so that light from the ball passes through the window or hole and is reflected off the mirror to a light receptor mounted within the detector.
- 30
7. A roulette wheel as claimed in any one of claims 4 or 5 in which the detector can count the number of pockets from a start pocket to the pocket where the ball is held.

- 7 -

8. A roulette wheel as claimed in any one of claims 4 to 7 in which the block fits into the gap so that the rim appears substantially continuous with no breaks in it.
- 5     9. A roulette wheel as claimed in claim 8 in which the block has markings on it which co-ordinate with corresponding markings on the rim.
- 10    10. A shaped block adapted to incorporate a sensing means and ad fit into a gap in a circular rim which is able to be positioned around a roulette wheel.
11. A block as claimed in claim 10 which has fixing means such as pegs or holes for pegs by which a detector can be attached to the block.
- 15    12. A ring adapted to fit on the outside rim of a roulette wheel which ring incorporates one or more sensing means as claimed in claim 7.
- 20    13. A ring as claimed in claim 12 in which at least one of the sensing means is a detector which is able to detect a ball which is held in a pocket whilst the wheel rotates and which detector incorporates means whereby the number of the pocket which holds the ball can be detected.

1/4

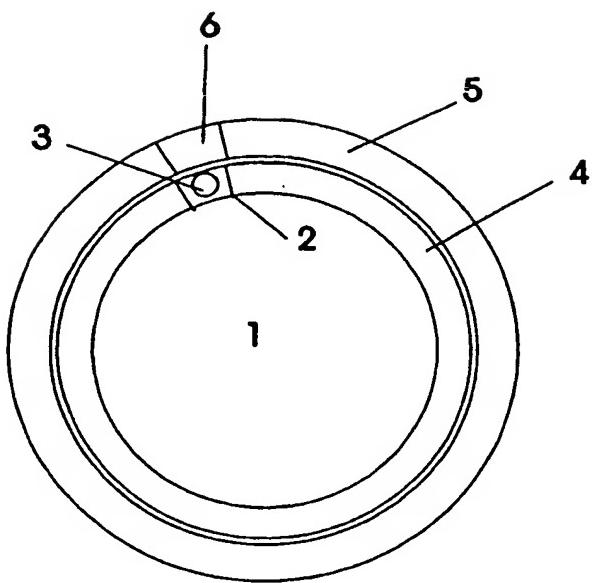


Fig. 1

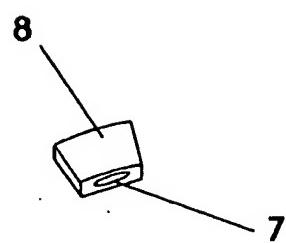


Fig. 2

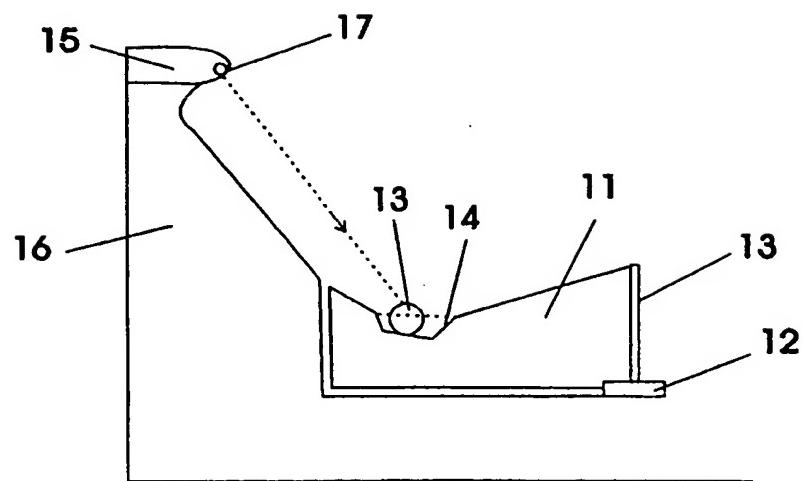


Fig. 3

3/4

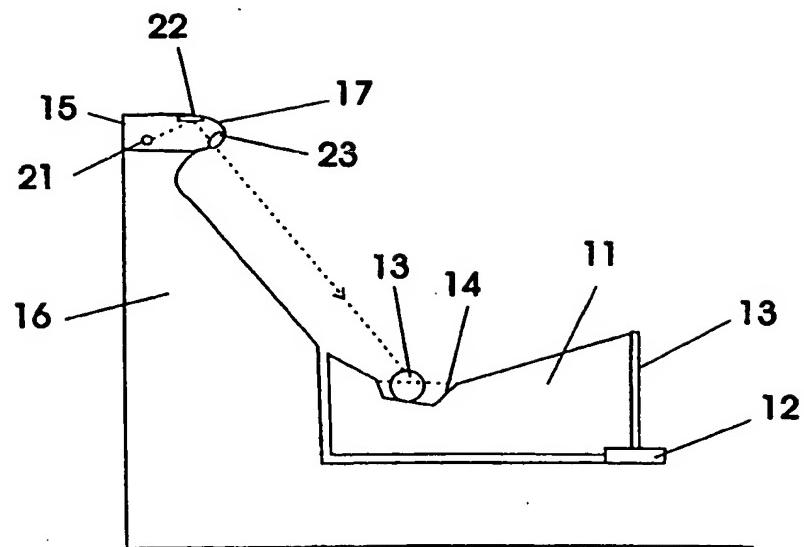


Fig. 4

4/4

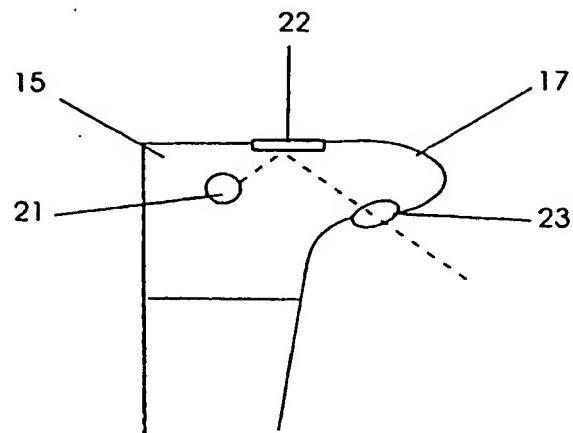


Fig. 5

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/GB 00/04227

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 A63F5/04

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 A63F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 934 999 A (VALDEZ JOHN M) 10 August 1999 (1999-08-10)	1,2,4,5, 7,10
A	column 5, line 1 - line 9; figures 1,10 ----	8,9, 11-13
X	US 5 836 583 A (TOWERS PAUL) 17 November 1998 (1998-11-17)	1,2,10, 11
A	cited in the application column 3, line 28 - line 36; figures 1-3	3-9,12, 13
A	US 4 732 385 A (CASTELLANOS RODOLFO B) 22 March 1988 (1988-03-22) the whole document	1-13
A	US 4 396 193 A (REINHARDT RICHARD L ET AL) 2 August 1983 (1983-08-02) the whole document	1-13

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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Date of the actual completion of the International search

18 January 2001

Date of mailing of the International search report

01/02/2001

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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International Application No  
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